



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street  
San Francisco, CA 94105-3901

March 4, 2016

Ken Harris  
State Oil and Gas Supervisor  
Division of Oil, Gas and Geothermal Resources  
801 K Street, MS-18-05  
Sacramento, CA 95812-100

Dear Mr. Harris:

The U. S. Environmental Protection Agency, Region 9, has reviewed the document titled: "UPDATED UNDERGROUND INJECTION CONTROL REGULATIONS - PRE-RULEMAKING DISCUSSION DRAFT" (Discussion Draft) posted on the California Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) website. Based on our review, we are providing a few comments, which we also briefly discussed with your staff on February 18, 2016.

Our comments are listed below with references to the revised Code Section and Page number.

**1. Revised Code Section 1720.1. Definitions, Page 1 of 17**

(a) "Area of review" means an area that includes a radius around each injection well that is part of an underground injection project, the radius being the greater of (1) or (2).

(1) The radius shall be at least the calculated lateral distance in which the pressures in the injection zone may cause the migration of the injection fluid or the formation fluid out of the intended zone of injection; and

(2) The radius shall be at least:

(A) One quarter mile for an injection well that is not a cyclic steam; or

**(B) 300 feet for an injection well that is a cyclic steam well.**

**EPA Comment:** EPA's UIC regulations (see 40 CFR § 146.6), state that the Area of Review (AOR) for an injection well, field, project, or area shall be determined using either a calculated zone of endangering influence or fixed radius method. These regulations further state that when using a fixed radius method, the minimum radius shall be ¼ mile. Finally, the regulations note that if the AOR is determined by a mathematical model pursuant to the calculated zone of endangering influence, then the permissible radius is the result of such calculation even if it is less than ¼ mile.

Thus, while the proposed 300 foot fixed radius for determining the AOR for cyclic steam wells may be an acceptable distance, it is less than the minimum ¼ mile distance required by EPA's regulations. If the State is going to establish a fixed radius AOR for an entire group/type of Class II wells that is less than ¼ mile, it will be important that a clear basis is provided for the selected fixed radius. EPA's regulations describe several factors that may be taken into consideration

when determining a fixed radius AOR, including: the chemistry of injected and formation fluids; hydrogeology; population and ground-water use and dependence; and historical practices in the area. In addition, we recommend that the state include in its rationale a description of any relevant data and/or modeling to support the selected fixed radius.

## **2. Revised Code Section 1720.1. Definitions, Page 2 of 17**

(e) "Underground injection project" means sustained or continual injection into one or more wells over an extended period in order to add fluid to a zone for the purpose of enhanced oil recovery, disposal, or storage. Examples of underground injection projects include water flood injection, steam flood injection, cyclic steam injection, injection disposal, and gas storage projects.

**EPA Comment:** This language provides several examples of projects that meet the state's definition of "underground injection project," including gas storage projects. EPA would like to point out for purposes of clarity that the Class II Underground Injection Control (UIC) primacy agreement between EPA and DOGGR covers only Class II UIC wells; gas storage wells are not considered Class II UIC wells. Per EPA's UIC regulations (see 40 CFR § 144.6), Class II wells are defined as follows:

(b) Class II. Wells which inject fluids:

- (1) Which are brought to the surface in connection with natural gas storage operations, or conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection;
- (2) For enhanced recovery of oil or natural gas; and
- (3) For storage of hydrocarbons which are liquid at standard temperature and pressure.

While EPA's definition of Class II wells refers to fluids "which are brought to the surface in connection with natural gas storage operations," the definition does not include gas storage projects (wells) within the scope of Class II. In addition, EPA's definition of Class II includes wells which inject fluids for storage of hydrocarbons, but only those "which are liquid at standard temperature and pressure."

While EPA has no concern with the state applying the same or similar regulatory requirements to underground injection wells that fall both within the scope of the UIC primacy agreement and outside of it, we thought it important to clarify this distinction with respect to gas storage projects.

## **3. Revised Code Section 1720.1. Definitions, Page 2 of 17**

(f) "Underground source of drinking water" or "USDW" means an aquifer or its portion that contains fewer than 10,000 TDS and has not received an aquifer exemption proposed by the Division and approved pursuant to the Code of Federal Regulations, title 40, section 144.7.

**EPA Comment:** EPA's UIC regulations (see 40 CFR § 144.3) define an "Underground source of drinking water" as "an aquifer or its portion:

- (a)(1) Which supplies any public water system; or
- (2) Which contains a sufficient quantity of ground water to supply a public water system; and
- (i) Currently supplies drinking water for human consumption; or
- (ii) Contains fewer than 10,000 mg/l total dissolved solids; and
- (b) Which is not an exempted aquifer.”

The proposed State definition is not the same as EPA’s definition in that it does not address the “sufficient quantity” aspect of EPA’s USDW definition, nor the concept that an aquifer that “supplies any public water system” or “supplies drinking water for human consumption” is a USDW under EPA’s definition, even if the TDS levels are greater than 10,000 mg/l.

Taking the proposed USDW definition at Section 1720.1, together with the state’s existing definition of “Aquifer” at Section 1760.1, it appears that the “sufficient quantity” aspect of EPA’s USDW definition is addressed because the definition at 1760.1 states that an aquifer must be “capable of yielding a significant amount of water to a well or spring.” However, given the difference between the proposed definition of USDW and EPA’s regulatory definition, it is unclear whether the state’s proposed definition is as protective as EPA’s regarding protection of potential USDW’s above 10,000 ppm TDS that either supply a PWS or currently supply drinking water for human consumption. Specifically, the federal regulations protect all aquifers that supply public water systems, regardless of TDS content. DOGGR’s proposed regulation would only protect those aquifers below 10,000 ppm TDS.

#### **4. Other Comments; Various Sections**

There are a few instances within the proposed regulations where the state proposes requirements without identifying specific timeframes for the requirements to be met or actions to be taken. We identified two examples of this in the following sections. In general, we recommend that the regulations specify specific timeframes where possible.

- Section 1724.6(c) – no specific timeframe is given for the “periodic” review of Project Approval Letters.
- Section 1724.10 (a) - a specific timeframe for notification of anticipated changes may be helpful.

Thank you for including US EPA in discussions regarding potential updates of the California Class II UIC Regulations. We look forward to continuing our conversation related to program improvements. Please don’t hesitate to contact me with any questions or concerns.

Sincerely,



David Albright, Manager  
Drinking Water Protection Section

